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1893-1894



384

Ottawa, November 3, 1913.

My dear President:-

Replying to your letter of the 25th ultimo, renewing your request for a grant from the Federal Government, for the establishment of a Ceramic Department in connection with your University, I beg to state that no appropriations of money have been made to Universities, to be expended by their Boards of Governors or Directors for work to be done in their Laboratories for the Department of Mines. The investigations made in McGill and Queen's Universities for the Department of Mines have been conducted under the personal supervision of the Director of Mines. Salaries of staff appointed by the Director of Mines for the special investigation undertaken, and expense accounts have passed for approval through the office of the Mines Branch. Weekly, or monthly reports of progress of the investigation have been made to the Director of Mines for his information, to enable him to give instructions for outlines of further procedure. All apparatus purchased for such investigation out of moneys furnished by the

Government

Government is returned, after the completion of the investigation, to the Department of Mines.

You do not ask that similar work be done, under similar conditions, at Toronto University, but you ask that an annual sum of money be granted by the Government to the University for the establishment of a Ceramic Department, to be expended at the discretion of the University authorities.

It will at once be seen that the procedure followed by the Department of Mines in availing itself of certain facilities of different Universities for special work is entirely different from the request submitted by you. Its favorable consideration by the Government would commit the Government to a policy of aiding by money grants the establishment of laboratories for special purposes by the different Universities of Canada, which might apply for such grant.

Nor can the case of the grant to McGill University by the Department of Railways, be considered as a precedent, as this grant was really a grant to the Intercolonial Railway, to enable it to join the C.P.R. and G.T.R. for the purpose of defraying the expenses connected with the establishment of a chair of Railway Engineering.

I may add that the Government has appointed a
Royal

Royal Commission to investigate the whole subject of Technical Education, the report of which is shortly to be laid before Parliament. In view of this, I am of the opinion that it would be extremely unwise to take action on your request, before the Government has had full opportunity to consider the recommendations of the Royal Commission on Technical Education, and has had time to frame a policy for the future.

I remain,

Yours very truly,

Louis Codrington

Dr. Robert A. Falconer,

President, University of Toronto,

TORONTO.

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287

UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE AND ENGINEERING

TORONTO, CANADA Nov. 26th 1913.

Dr. R. A. Falconer,
President, University of Toronto.

Dear Sir:-

With reference to the correspondence between yourself and the Minister of Mines on the subject of financial aid to the University to establish a Department of Ceramics, I beg to call your attention to the following considerations:

That correspondence included copy of a letter from the Director of Mines to the Deputy Minister making the following statements: "While from an educational standpoint the country would be greatly benefited by universities taking up the training of men in the special branch of Ceramics and thus furnish the country with experts competent to take intelligent charge of operating plants, such a department, established with the main purpose of teaching young students, could not undertake the practical part of the work in this branch of economics which is one of the functions of the Mines Branch of the Department of Mines. Were an educational institution inclined to attempt to do commercial work in addition to its legitimate teaching work, either the work would have to be done by inexperienced students or else by instructors whose time and energy should be taken up with instruction and not with analyses and determinations for outside parties, which must be furnished promptly. Manifestly, either the work done, if done by students will be unreliable, or if done by instructors or professors during term time the students will be neglected. These conclusions are based

upon an experience of over 30 years as Professor and Dean in the Science Faculties of different universities and in different countries."

"Moreover, if the Government were to grant this request of President Falconer's a precedent would be established, which would render it difficult for the Government to refuse grants for the same or similar objects, which would be sure to come to it from other Universities."

"For these reasons I respectfully submit, that the Grant asked for should not receive favourable consideration by the Government."

(Signed) Eugene Haanel,

Director of Mines."

The Minister of Mines in his letter of the 30th of June quotes the facts stated in this letter from the Director of Mines as reason for his not recommending the granting of any financial aid towards the University of Toronto.

With regard to these statements of the Director of Mines upon which the Minister's refusal to aid the University of Toronto to establish a clay-working laboratory appears to be based I would point out that the Department of Mines in 1912 published a Report in six volumes, entitled "An Investigation of the Coals of Canada" conducted at McGill University, Montreal, by J. D. Porter and others. The title page reads - "Canada Department of Mines, Mines Branch, The Hon. W. Templeman, Minister; A. P. Lowell, Deputy Minister; Eugene Haanel, Ph.D. Director. An Investigation of the Coals of Canada with reference to their economic qualities: as conducted at McGill University, Montreal under the authority of the Dominion Government by J. B. Porter, E.M., D.Sc.; and R. J. Durley, Ma.E. assisted by Theophile C. Denis, B.Sc., Edgar Stansfield, M.Sc. and a staff of special assistants.

The Report begins as follows: "In the autumn of 1906 the Canadian Government through Dr. A. P. Lowe, Director of Geological Survey, decided to undertake a study of the fuels of the Dominion, somewhat on the lines of the fuel tests which had already been commenced by the United States Geological Survey but inasmuch as the Government had not at Ottawa any suitable mechanical laboratories and as research work had already been done by the Mining Department of McGill University on a number of Western coals, Dr. Lowe invited Dr. Porter the Head of that department, to undertake the larger investigation. This proposal was approved by the University Governors and Dr. Porter was authorized to carry out the tests in the University laboratories without charge on the understanding that the Government would pay for such apparatus as might be required to supplement the existing equipment and to make good all additions to the salaries, wages and supply accounts rendered necessary by the investigation/

Shortly after the commencement of the investigation the Dominion Department of Mines was created under the Hon. William Templeman as Minister of Mines and Dr. A. P. Low as Deputy Minister; and the investigation, together with all matters relating to economic minerals, was transferred from the Geological Survey to the Mines Branch under the directorship of Dr. Eugene Haanal. The original arrangement was, however, in all other respects, continued without change.

The technical staff engaged in the investigation comprised: The Professor of Mining Engineering, McGill University; The Professor of Mechanical Engineering, McGill University; Mr. T. C. Denis, Dept. of Mines and Mr. Edgar Stanfield, Chief Chemist of the special staff engaged for the tests; The Assistant Professor of Mechanical

Engineering; The Lecturer in Mechanical Engineering of McGill University; a number of demonstrators and fellows and a number of machinists, mechanics and foreman. It is stated also that the Professor of Metallurgy in McGill University and the Professor of Physics very materially aided in the progress of the work by giving occasional assistance and advice.

The laboratories of the Mining and Mechanical Departments of McGill University in which the tests were made were built and equipped some few years ago on such a scale that the equipment needed very little augmentation in respect of sampling, crushing, coal washing, steam boiler tests and chemical analysis although a number of minor pieces of apparatus had to be purchased such as extra calorimeters, pyrometers, thermometers, etc. etc.

In the matter of producers and gas engine tests larger expenditure was necessary as the University equipment was on too small a scale for the extensive tests contemplated. An addition 25 x 70 was therefore built to the ore dressing laboratory and equipped with a complete plant of the most modern type, the cost for building and plant being approximately \$12,000.

The divisions of the investigation included sampling in the field, crushing and sampling in the laboratory, mechanical purification, coking trials, boiler trials, producer trials and a large amount of work in the Chemical laboratory such as the analysis of coal samples, gas producer products, coking products, gas from boiler and producer tests and determination of calorific values in solid and gaseous fuels.

With regard to the producer trials specifications^{were} prepared and tenders asked for producers for this purpose but the producers which were erected failed to ~~make~~ meet the requirements originally

specified and were therefore removed. The experience gained in the tests above mentioned enable Prof. Durley to design a producer which did meet the requirements and which was installed and used. The results of the investigation are included in the very valuable report alluded to, a report which will greatly enhance the high reputation already enjoyed by McGill University.

It appears therefore that the Department of Mines has already granted very substantial aid to one university in the matter connected with economical welfare of the Dominion and there would not appear therefore to be any new departure in the granting of some such aid for a similar purpose to the University of Toronto.

It is also stated in the Pulp and Paper Magazine of Canada for the 15th of June that a laboratory for the investigation of forest products is being installed at McGill University by the Dominion Department of Forestry. It would therefore seem to be only following out the policy already inaugurated by the Government if the Dominion Government were to give substantial aid in the equipment of a laboratory for investigating clays and similar materials and in supplementing salaries, wages and supplies rendered necessary by such investigation.

The Department of Mines has not so far as I am aware either at Ottawa or elsewhere the equipment and staff required for an investigation such as I have indicated and such an investigation could be made in connection with the University of Toronto better than at Ottawa or anywhere else.

Yours truly,



UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE AND ENGINEERING

386

TORONTO, CANADA Nov. 27th 1913.

Dear Mr. President:-

From the letter of the Minister of Mines which you sent me yesterday but which I did not receive until I had written the reply, I learn that all the apparatus provided for this special investigation is the property of the Department of Mines and is to be returned to the Department when the investigation is completed. This included the extension to the ore dressing laboratory of McGill, 25 x70 equipped with a complete plant for producer and gas engine tests of the most modern type. It does not appear from the Minister's letter whether this building and plant is to be sent to the Department at Ottawa or is to remain at McGill University as the property of the Department of Mines.

The Minister has not yet refused to grant assistance in an investigation of the clays of the Dominion to be conducted at the University of Toronto. under the supervision of a Government Department and if it is impossible to obtain any assistance in erection of a laboratory for teaching purposes, some assistance of the kind indicated would be a welcome and valuable aid to the University as well as to the clay workers of the Dominion. I understand that the laboratory established at McGill in connection with the Department of Forestry is for the investigation of problems connected with pulp and paper. Might not a laboratory for investigation of some other Forestry problem such as wood distillation, wood alcohol, turpentine, etc.

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be established on similar lines in connection with the
University of Toronto?

Yours truly,

W. H. Ellis



January 20, 1914.

Dear Dr. Falconer:-

Referring to your letter of the 10th instant, I am sending you herewith copy of a further memorandum from Dr. Haanel, with regard to the establishment of a ceramic laboratory at the University of Toronto.

Yours very truly,

Louis Cidenc

Robt. A. Falconer, Esq.,

President, University of Toronto,

Ottawa.

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Ottawa, January 17th., 1914.

Memorandum:

Honourable Louis Coderre, M. P.,
Minister of Mines.

Replying to Dr. Falconer's letter of January 10th., 1914, I beg to advise you that the question of the establishment of a "temporary investigation" in clays at the University of Toronto has not been under discussion hitherto, nor has it been shown that there is any work that can be done there better than in our own laboratories at Ottawa.

On February 14th., 1913, Dr. Falconer wrote as follows, in a letter addressed to the Honourable W. J. Roche, then Minister of Mines:- "My purpose in writing to you is to ask whether the Dominion Government would be willing to make an annual grant to the University towards the conduct of this Department" (of Ceramics), ***** "If I am not mistaken, the Dominion Government has already made a grant to at least one other University of the Dominion for what may be termed industrial education."

On October 25th., 1913, Dr. Falconer repeated his request, writing as follows:- "There are, however, good reasons in my judgment why such a grant should be made to us for the further development of a department which already has been established in a small way in this university." And further, "It seems to me, therefore, that a precedent has been established."

On

On December 10th. Dr. Falconer says:- "I simply ask that the policy already initiated and carried out at two other Universities of the Dominion should be extended to the University of Toronto," ***** "What has been done for McGill with regard to coal should be done for the University of Toronto in regard to clay."

On December 18th. he writes:- "We do not expect annual assistance from the Federal Government for a department of Ceramics" ***** "We ask that you establish in the meantime a subsidiary laboratory for the investigation of clays, particularly those of Ontario and the region in which Toronto is situated."

On January 10th. Dr. Falconer concluded his letter with these words:- "Nor can I agree with Dr. Haanel that my proposal would practically amount to the adoption by the Federal Government of a policy of granting subsidies to the different Universities of Canada."

Dr. Falconer appears to have failed to grasp the fact, already pointed out in previous memoranda, that Toronto University has been given exactly the same treatment as has been accorded to Queen's and McGill by the Mines Branch of the Department of Mines. He also fails to appreciate that the work at McGill was discontinued, and that at Queen's is to be discontinued, because the establishment of laboratories at Ottawa makes further work at these points unnecessary.

Dr. Falconer considers that the discontinuance of work at McGill and Queen's after our own laboratories were equipped for the work is not an argument against the initiation at Toronto of work for which laboratories are being provided here. In previous communications, Dr. Falconer cited this very work as the most cogent reason why laboratories should be established at Toronto. Moreover, my

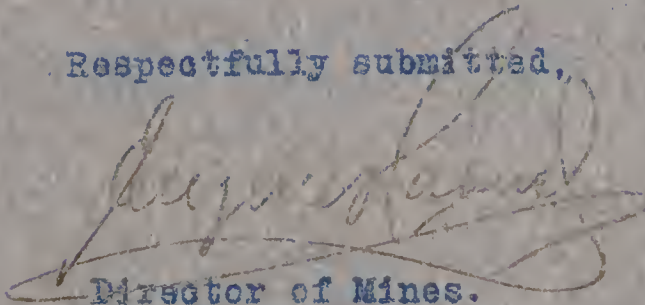
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reference to the discontinuance of this work was made, not as an argument against establishing laboratories at Toronto, but to show that the cases were not parallel, and that the necessity for establishing new laboratories, even temporarily, at Toronto for testing clays does not exist, because provision has already been made for their establishment at Ottawa.

With reference to the last quotation cited above, in which Dr. Falconer states, in effect, that he does not agree with my opinion that the establishment of a duplicate laboratory at Toronto would create an embarrassing precedent, I can only state that Dr. Falconer's own letters, from which citations are given above, only serve to confirm my previous judgment. Moreover, another application has been received from another University for somewhat similar favors.

I would further draw your attention to the fact that the representation made to the authorities of Toronto University by the Clay Workers' Association of Ontario was to the effect that a Department of Ceramics should be established similar to the various other Engineering Departments of the University. The University was not approached on the subject of the establishment of Commercial Testing Laboratories, even temporarily. This request of the Clay Workers' Association was the basis of Dr. Falconer's original application for an annual grant. His most recent request for temporary investigations, even if granted, would not meet the requirements of the Association.

Respectfully submitted,



Director of Mines.



462

Ottawa, December 30, 1913.

Dear Sir:-

With reference to your further letter of the 18th instant, in connection with the establishment by the Government of a Ceramic Department at the Toronto University, I beg to transmit to you herewith copy of a memorandum prepared by Dr. Haanel, Director of Mines, on the subject.

Yours very truly,

Louis Coderre.

Robert Falconer, Esq.,

President, University of Toronto,

Toronto, Ont.

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Ottawa, December 26th, 1913.

MEMORANDUM:-

Honourable Louis Coderre, M.P.
Minister of Mines.

Referring to President Falconer's letter of December 18th, with reference to the establishment of a Ceramic Laboratory at Toronto University, I beg to state that President Falconer has again been misinformed.

The Dominion of Canada Assay Office at Vancouver is maintained at Vancouver for strategical reasons as a purchasing office of gold for the government. It is not connected with any University, and general assay work, either for the Department of Mines, or for the public, is not done there.

In my last memorandum with respect to this matter I referred to the fact that the investigation in coal at McGill University had been discontinued and that all the valuable portion of the plant had been transferred to the new plant at Ottawa.

The equipment at Queen's University will be transferred to Ottawa at the end of next year, when the special work now being done there is completed.

Parelleling the work at McGill and Queen's Universities, we employed three members of the staff of Toronto University on work for the Mines Branch. At present we have Dr. W. A. Parks

of Toronto University, on our staff temporarily. He has already been employed for three seasons, and his work will last for at least two more. It happens that the work done for us by the Toronto University Professors did not need as elaborate an equipment as that needed at the two other universities, and, therefore, the financial cost to the government for equipment, which had either to be abandoned or transferred, is less; but, on the whole, Toronto University professors have been more specially favored than others.

We have already made arrangements for the establishment of extensive laboratories at Ottawa. These laboratories are already equipped for General and Special Chemical investigations, for coal testing on a commercial scale, and for ore dressing work on a commercial basis. Part of the equipment that will be used for testing road metals and clays is already installed. In these laboratories we are now treating materials received from all parts of Canada, and the Dominion Railway Commission has established a special series of freight rates for samples being shipped to these laboratories for testing purposes. No excuse can be found for equipping two laboratories in Ontario at the same time, for the same special work, and such an expenditure could not be justified before the House of Parliament.

Moreover, the very fact that this request, even~~x~~ in its

its present modified form, has been profered showa how inadvisable it would be to grant it. Work which was started at McGill before the Mines Branch was created was allowed to be completed there Before the equipment was transferred to Ottawa, and work urgently needed was done at Queen's, e when our buildings had not been completed, and this is cited as a reason for beginning new work at Toronto, after our laboratories here are partially equipped for that very work.

To grant the request of President Falconer would mean the establishment from Government funds, of two laboratories, in one province, to do exactly the same kind of work simultaneously.

Such action on the part of the Federal Government would create a precedent which would prove exceedingly embarrassing as each of the six Provincial Universities, and McGill and Queen's would almost certainly avail themselves of the orecedent created and make similar demands.

The favourable consideration of President Falconer's request, therefore, would practically amount to the adoption by the Federal Government of a policy of granting subsidies to the different Universities of Canada for the establishment of Laboratories for a class of work, for which the Mines Branch of the Department of Mines was specially created by Act of Parliament.

Respectfully submitted.

(sgd.)

EUGENE HAANEL.
DIRECTOR OF MINES?



404

December 17th, 1913.

My dear President:-

With reference to your further letter of the 10th. inst., regarding the establishment of a ceramic department in the University of Toronto, I beg to enclose herewith copy of a memorandum prepared by Dr. Eugène Haanel, Director of Mines, who is better acquainted than I am on this subject.

Yours very truly,

Louis Codrington

Robert A. Falconer, Esq.,

President, University of Toronto,

Toronto, Ont.

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Ottawa, December 16th, 1913.

Memorandum:

Honourable Louis Coderre, M.P.,
Minister of Mines.

Re President Falconer's request for an annual
grant to establish a Ceramic Department
in Toronto University.

Referring to President Falconer's letter of the 10th. instant in which he presents additional reasons why his request for a grant from the Federal Government for the establishment of a Ceramic Department in Toronto University should be favorably received, I beg to state that the precedents he cites, created on account of the work done for the Government at McGill and Queen's Universities, are based on a misunderstanding.

In my former memorandum, dated October 31st., 1913, I stated as follows:

"No appropriations of money have been made to Universities, to be expended by their Boards of Governors or Directors for work to be done in their Laboratories for the Department of Mines. The investigations made in McGill and Queen's Universities for the Department of Mines have been conducted under the personal supervision of the Director of Mines. Salaries of staff appointed by the Director of Mines for the special investigation undertaken, and expense accounts have passed for approval through the office of the Mines Branch. Weekly, or monthly reports of progress of the investigation have been made to the Director of Mines for his information, to enable him to give instructions for outlines of further procedure. All apparatus purchased for such

such investigation out of moneys furnished by the Government is returned, after the completion of the investigation, to the Department of Mines.

President Falconer does not ask that similar work be done, under similar conditions, at Toronto University, but he asks that an annual sum of money be granted by the Government to the University for the establishment of a Ceramic Department, to be expended at the discretion of the University authorities.

It will at once be seen that the procedure followed by the Department of Mines in availing itself of certain facilities of different Universities for special work is entirely different from the request submitted by President Falconer."

I beg to further state that when the work done at McGill in connection with coal was inaugurated, no fuel Testing Station existed in connection with the Department of Mines. On the erection and completion of the Fuel Testing Station at Ottawa, the apparatus and appliances - the property of the Department of Mines - were removed to the Fuel Testing Station and no further work on coal is being done at McGill.

The work done at Queen's by Dr. Malmus is exactly similar, and is being done on the same conditions as the coal investigation was undertaken at McGill, namely, that when the enquiry is completed all apparatus bought by the Government will be returned to the Department of Mines.

It will be evident that neither McGill nor Queen's University asked for a grant to enable them to establish permanently - the one a Fuel Testing Station, the other a Metallurgical Laboratory. What President Falconer asks is, that assistance be given by the Federal Government for the permanent establishment of a Ceramic Department in connection with Toronto University.

Arrangements.....

Arrangements are completed for the establishment, in connection with the Department of Mines, of a Ceramic Division and the erection of a plant in the building occupied by the Mines Branch. No necessity, therefore, exists, as was the case when work was done at McGill and Queen's Universities, for the Department of Mines to avail itself of facilities not possessed by it, since provision has already been made to provide, in the Mines Branch Building, all equipment required for the complete investigation of the clays of the Dominion of Canada.

What, therefore, President Falconer asks is, that he be authorized to duplicate, at the expense of the Government, the machinery required for the Ceramic Division of the Mines Branch.

Whatever private arrangement may have been entered into by the Director of the Geological Survey, and Mr. Keeler's appointment for this work, is, as stated by President Falconer a private arrangement, and has not the sanction of Parliament, as this class of work is specially assigned by Act of Parliament to the Mines Branch of the Department of Mines.

I may also mention that the Mines Branch has availed itself of the services of Dr. Coleman, Professor Walker and Dr. Parks, of Toronto University, in connection with work for the Department of Mines on the same terms as Dr. Porter of McGill, when conducting the coal investigation. Toronto University has not, therefore, been overlooked, but has had the same privilege accorded its staff as McGill or Queen's.

Regarding the testing of road metal to which President Falconer refers, I beg to state that the extensive Ore Dressing Laboratory of the Mines Branch possesses already a nearly complete equipment for this purpose.

Respectfully submitted,

(sgd) Eugene Haanel,

Director of Mines.

GEOLOGICAL SURVEY
R.W.BROCK, DIRECTOR.



406
Ottawa, Dec. 18th, /13.

Dear Mr. Coderre,

I have just had your letter of the 10th inst., in reply to mine of Dec. 4th, forwarding a memorandum from Dr. Haanel. I am sorry that Dr. Haanel is under a misapprehension as to the meaning of my proposal. He says that "what President Falconer asks is that assistance be given by the Federal Government for the permanent establishment of a Ceramic Department in connection with Toronto University," but this is not my present proposal. My first letter did make such a proposal before I fully understood your relations to the other Universities, but in your letter to me of Nov. 3rd, you draw my attention to the situation as it really exists. What I asked in my last letter is that you should do for us just the kind of thing that you have done for McGill and Queen's Universities. We do not expect annual assistance from the Federal Government for a department of ceramics. Dr. Haanel states however that arrangements are completed for the establishment in connection with the Department of Mines of a Ceramic Division and the erection of a plant in

in the building occupied by the Mines Branch. With regard to this I should like to state that with such a building at Ottawa all your main departmental work would of course be conducted there, but probably you would not be able to overtake in it the kind of investigation that we propose to have done in Toronto. We ask that you establish in the meantime a subsidiary laboratory for the investigation of clays, particularly those of Ontario and the region in which Toronto is situated. It is the centre of a large clay working district, and I am assured from deputations that have visited us that the clay workers of Ontario would find this laboratory to be extremely useful, and that its establishment would be accepted by them with much favour. As a precedent I may mention that although the head assay office of the Department of Mines is in Ottawa the Department also maintains an assay office in Vancouver to serve important local purposes.

I shall take it as a favour if you will consider again my last letter, and if possible give us a favourable reply to our request.

Yours faithfully,

The Hon. Louis Coderre, K.C., &c.,
Minister of Mines,
Ottawa.

R. A. Falconer

EDUCATIONAL facilities for the clayworker, discussed editorially at some length in our issue of December 10, 1913, would appear to be a live issue, judging by the correspondence on the subject published elsewhere in this issue and also by the announcement that the Canadian Clay Products Manufacturers' Association has concluded arrangements for the equipment of an up-to-date clay-working department in the new technical school. This is an excellent beginning and it is to be hoped that it will stimulate other educational authorities into action. Doubtless many interesting details will materialize at the forthcoming annual convention of the Association, but we are sure that the equipment of the new department at Toronto will be thoroughly up-to-date and that the requirements of all will be met by the proposed programme of a regular course of ceramics, extending over perhaps two or three years, and a short winter term of two or three months at practical work.

It is evident from President Falconer's letter, published in this issue, that the University authorities were favorably disposed towards a course of ceramics, but in spite of the fact that progressive men closely identified with the industry promised financial assistance—in one instance to the extent of furnishing a complete laboratory and in another to bearing part of the expense of the general administration—the question of ways and means proved an insurmountable obstacle.

Competition is on the increase and aggressive measures must be taken to meet it. The monopoly of trade enjoyed by some of our manufacturers during the early stages of Canada's development is explained by the fact that the possibilities of the country were not adequately recognized. Now our business is on a more substantial basis and we must advance with the times or yield our part to others.

England is awakening to the importance of providing well-equipped schools for clayworkers. Germany, the leader in all spheres of technical education, has some half-dozen excellent schools, and our neighbors to the south recognize clayworking as a subject of university education. What is the attitude of Canada? In what category shall we place the achievement—or lack of achievement—of the last few years?

Now that the national association—thanks to its live president, Mr. Charles A. Millar, and others with whom he has associated himself—has shown itself capable of acting as well as talking, and of producing something more tangible than "papers" and menu cards, it will most certainly come into wider recognition and take a higher place among the trade and technical bodies of the Dominion. It is to be hoped that this will be but the first chapter of a long history of achievement and that before many years the facilities at the command of clayworkers throughout the country will be second to none. It is with the greatest pleasure that we extend our congratulations to the Association.

was done. The method of running the conduits from the junction boxes is brought out very clearly. Fig. 2 is a working drawing of the conduit construction in a portion of the ceiling. Dotted lines show how the junction boxes are interconnected, while the dotted line extending to the right from the junction box in the upper right-hand corner of the figure indicates the circuit from the wire shaft containing the risers from the service board in the basement.

Outlets will be provided by milling out the lower half of the conduit with a special milling machine and fastening a conduit-outlet box to the pipe with U-bolts, the box and bolts being of special design. It is claimed that the conduit can be milled out without disturbing the conductors and that no rough edge or burr will be left at the opening to injure the insulation.—Electrical Review.

The council of the Fort William Board of Trade passed a resolution recently requesting that the Railway Board defer action regarding the proposed station building of the Canadian Northern Railway until the Board of Trade have considered the revised plans.



Educational Facilities for the Clayworker*

Poor Men, Poor Products, says Professor Day

Guelph, Jan. 1, 1914.

Editor Contract Record:

I have read your editorial, "Educational Facilities for the Clayworker" very carefully. Knowing the product of the clay tile industry from one end of the province to the other, as I do, I am firmly convinced that there is urgent need for some educational facilities whereby the clay-workers of Ontario may receive technical training in the principles and practice of the industry. Many yards turn out tile of uniformly high quality, others of almost uniformly poor quality, while from some other yards the product is partly good and partly bad. I am glad to say that most yards turn out high-class tile, but from a few yards tile are supplied to the trade that cast a reflection, not only on the individual manufacturer concerned, but to a certain extent upon the industry in general. With a few trained men going out into the industry year by year from the university or technical school these weaknesses would be gradually eliminated and the industry in general would be highly benefited. What is true regarding tile must be true for clay products in general.

As to the best means of providing the facilities for this professional training, I think exception should not be made in the case of this particular industry. The training of professional men for this work should be provided on the same basis as the training of professional men for other lines of industry throughout the province. If it has been necessary for pioneers in other lines of engineering to have courses established by financial assistance from the industries concerned, then the clay products industry should not hesitate to deal with the matter in this way. But if these courses have been established by public assistance through the university and other schools, then a course in ceramics should be provided on the same basis. The need is great and the time is ripe.

I think the question of ways and means of securing the

desired end might well form a topic for discussion at the forthcoming convention of the Canadian Clay Products Manufacturers' Association.

Yours very truly,

Wm. H. Day.*

Mr. Joseph Keele Cites Growth of Industry

Toronto, Dec. 31, 1913.

Editor Contract Record:

At present there is not an educational institution of any kind in Canada prepared to give men either a full or partial training in ceramic engineering. Many of our universities already give almost two-thirds of the course necessary for the work, which includes geology, physics, applied chemistry, electricity, heat engineering, etc. The accommodation, equipment, and teaching staff required to give the complete course in ceramics could be added at a comparatively low cost. Most students after graduation would have to enter the employment of a manufacturer in some line of clay wares, so as to get practical experience. Certain of the large firms in the United States will give a year's varied employment to any student graduating in ceramics who applies for a position, with the promise of permanent employment if he excels in any of the departments of the industry.

The Ontario Clayworkers' Association made an effort five years ago to have a course in ceramic engineering established in the University of Toronto. The committee appointed by the Provincial Government, consisting of three of the members of the faculty of applied science and two members of the association, reported favorably on it, but the university authorities were not prepared to carry it out.

Considering the fact that the value of the output of clay products for the year 1912 was more than ten and one-half millions, and that Ontario was credited with about 45 per cent. of this, it is important that the clayworkers of the province should be granted their demands for technical education.

Yours truly,

Joseph Keele.†

President Falconer's Views

University of Toronto, Dec. 13, 1913.

Editor Contract Record:

I have read with a great deal of interest your article on "Educational Facilities for the Clayworker" which appeared in the issue for December 10. It seems to me we must before long develop greatly our educational facilities for those who are engaged in this industry, which is becoming one of the largest in the Dominion, and is of especial value to the people of this Province and the district around Toronto.

You are right, I believe, in making a distinction between the education that the University may afford and that which can be provided in the Technical Schools. We have made a very small beginning in the way of giving instruction in Ceramics for the man who is to become an engineer, and I have no doubt that before long this will be developed into a department of considerable importance. Indeed, as you mention in your article, nothing but financial difficulty has stood in the way of its development long before this. We are at present endeavouring to lay the foundation of such a department. This, however, would be intended, as in the case of the other university faculties, to train the man who is to take charge of large constructive works, the investigator into the quality of clays, and the research student, who might be of immense commercial value to the community. There is on the other hand the workman, the artificer, the foreman, whose skill the community requires. More and more we must think

*A discussion of an editorial article published under this caption on p. 87 Contract Record, Dec. 10, 1913.

†Professor of Physics, Ontario Agricultural College, Guelph, Ont.
‡Of the Geological Survey.

of his education. If we had a large department of Ceramics, we might be able to establish short courses for him in the interval until a trade school was established under the auspices of the Technical School, and such a trade school as this should before long have a place in our community. It is one of the steps that is necessary for the development of our workers. I hope, therefore, that we may look forward to having in the near future a full equipment for the education of the worker in clays, whether he be a director or engineer in charge, or the intelligent foreman and high-class artificer who will take pleasure in understanding his work and producing the best possible results.

Yours sincerely,

R. A. Falconer,
(President).

Mr. John M. Bowman's Objections

Mr. John M. Bowman, manager of the Don Valley Brick Works, asked for an expression of opinion as to the desirability of establishing a course of Ceramics in Toronto's new

technical school, said that he was not in favor of the project. Such a course as that suggested for the technical school could not be of much practical use for future clayworkers. Only by coming in contact with the specific clays with which a man was to be identified could he acquire any really useful knowledge of the successful handling of clays. Mr. Bowman instanced the case of a clayworker of more than twenty years' practical experience who had only within recent years acquired a thorough understanding of the clay bank he was operating. His own experience was that students emerging from such a course in Ceramics had been absolute failures when faced with actual manufacturing problems. A man might be thoroughly successful in the handling of one kind of clay but a total failure with another—an argument which led Mr. Bowman to believe that attempts at burning clays of various kinds in the technical school would lead to nothing but confusion. The only possible way by which a man could learn brickmaking thoroughly was to take up actual work in a yard where the manufacture of miscellaneous brick was carried on. Then he would learn to familiarize himself with the properties of the various clays in use.

C.M.
OFFICE OF THE
DEPUTY MINISTER



401

Ottawa, Jan. 16th, 1914.

My dear Dr. Falconer,-

I have just returned to Ottawa and find your letter of Jan. 10th. I wish to thank you for your kind references to my recent appointment. The matter will probably come before me now in a more definite way. I shall, of course, be glad to give it sympathetic consideration. There can be no objection, so far as the nature of the request or precedent is concerned. It may be a little time before we can take the matter up, but I shall not forget it.

Wishing you a Bright and Prosperous New Year,

Yours sincerely,

W. C. Brock

Robert W. Falconer, Esq., C.M.G., M.A., LL.D.,
President, Toronto University,
Toronto, Ont.

**The Courses
in Ceramics.**

When Mr. Daniel Chisholm told us a year ago that we ought to see about having a course established at the Toronto Technical School, we didn't quite see it his way, but fortunately we did come around to his point of view, and when our wants were made known to Dr. McKay, the Principal of the Technical School, he was ready to hear the committee and consider the proposition to start a course in Ceramics. As a result rooms have been set apart for laboratories and classrooms. Unfortunately Dr. McKay was unable to be present at the Convention, but the Clay-Workers will be well taken care of in the new school.

At the 1913 meeting in Toronto, a deputation of the whole convention waited on President Falconer and laid before him the needs of an engineering course in Ceramics. One of the pleasant features of this year's convention was the visit of President Falconer to the convention to report progress in the development of such a course. At present about thirty students, mostly of the final year were taking up ceramic work and preparing their theses on clay-working subjects.

President Falconer outlined the work which is now being carried on at Toronto University, and asked for the further support of the Canadian National Clay Products' Association in their endeavor to establish a course in Ceramic Engineering and Investigation in a line with other engineering courses for the training of men who would be able to take up the directing of large problems.

As a temporary arrangement, and one which would hasten the establishment of this course, the President suggested that we co-operate with the University in urging the Government to establish local investigating laboratories, one of them at Toronto University.

As a result of the President's gracious visit and report, a resolution was moved, seconded and passed unanimously, that, we urge the Dominion Government to establish such laboratories. Present prospects are very bright, therefore, for the carrying on of both engineering and technical work in ceramics in the near future.

* * * *

*The Canadian Clay-Workers
- February 1914 -*

February 1914 31

In closing, Mr. Gibson recommended the adoption of standards in the manufacture of brick and hollow tile and said that he hoped that before very long Canadian manufacturers would get together and do something along this line.

It might be said that this is the first time the National Fireproofing Co. has ever allowed one of its men to speak at a convention, or any other gathering, and the association felt much honored.

An Interesting Paper on Tile.

"Tile" was the subject of a paper given by Prof. W. H. Day, of the Ontario Agricultural College, Guelph, Ont. His remarks dealt largely with the use of tile on the farm, and he deplored the headway that the makers of cement tile had made over the manufacturers of the clay product. He gave figures gleaned from tests made of the two kinds and showed that the clay was infinitely superior to the cement kind and urged the makers of clay tile to get into the game on a larger scale and make their product the one in general use. He stated that there were farmers who wanted to tile-drain their land, but could not do so simply because they could not get the tile. This is not as it should be, and it is up to the manufacturers of clay tile to get busy and make themselves known.

In the discussion that followed, Professor Day pointed out the importance of clay tile manufacturers making only a good article. He stated that he had experimented with samples that were not all they should be, and if this went on the industry would suffer.

President Falconer, of the University of Toronto, visited the convention and told what was being done at his institution towards establishing a course for the training of ceramic engineers. He reported that while as yet no exclusive course in ceramics had been started, there



GORDON C. KEITH
Editor The Canadian Clay-Worker, and one of
the 1914 Executive Committee.

were a considerable number of young men who were receiving instruction in this work in conjunction with the other engineering courses at the University. He referred to the establishment of a course in the new Toronto Technical School and said he hoped it would not be long until the Government did something along this line until the University is in a position to do more.

Dean Galbraith, of the University, also spoke a few words, and told that the holding of the annual convention of the C.N.C.P.A. in Toronto, and other pressure that was being brought to bear, was having a great influence and that the University authorities were waking up to the

Recd

UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE AND ENGINEERING

411
TORONTO, CANADA Feb. 24th 1914.

Dr. R. A. Falconer,
President, University of Toronto.

Dear Mr. President:-

During the present year the following lectures on Clays have been given by Mr. Keele. To the third year Architects have been given eight lectures, to the fourth year Civils in Sanitary and Highway Engineering, two lectures and to the fourth year Miners, two lectures.

In the department of Metallurgy to all fourth year men taking Metallurgy of whom there are 19 has been given laboratory work with clays. This work includes testing for the following:

1. Plasticity
2. Shrinkage on drying
3. Shrinkage on burning
4. Fusibility
5. Tensile strength
6. Water absorption of the burned shape

Three fourth year Miners who have elected to take their theses in Metallurgy are using the Clay laboratories in this work. They are receiving aid in this from Mr. Keele. Their thesis work will include the making and testing of refractory bricks used in Metallurgical work, in addition to fairly complete testing work with typical Canadian clays.

Yours faithfully,

Geo. S. Lucas
Professor of Metallurgy.

OFFICE OF THE
DEPUTY MINISTER.



412
Ottawa, March 16th, 1914.

Dear Mr. Kemp,

Replying to your letter of the 3rd inst., addressed to the Hon. Louis St. Laurent, referring to the wish of Prof. Falconer for the establishment of a laboratory for ceramics at the University of Toronto, this request will receive careful consideration. The point to be considered is not whether it is a proper policy to have work done at the University, for I see no objection whatever to that, it is whether we can so arrange departmental work at Ottawa, that we can spare the technical officer required to conduct the Toronto laboratory. This requires some consideration and planning before it can be answered.

Yours respectfully,

R. W. Brock

The Hon. A. M. Kemp, M.P.,
House of Commons,
Ottawa.



713

House of Commons

OTTAWA 17th March, 1914.

Dear Dr. Faulkner:-

Sir Edmund Osler handed me your two letters which you had written him in respect to the establishment in the University of Toronto of a laboratory for ceramics.

I am enclosing herewith a letter which I have just received from Mr. R. W. Brock, the Deputy Minister of Mines, dealing with the matter.

I would be glad if you can offer me any suggestions which I can make to Mr. Brock with a view of furthering the object in question.

I remain,

Yours faithfully,

A handwritten signature in cursive script, appearing to read "J. E. Hall".

Dr. Faulkner,
Pres. Toronto University,
Toronto, Ont.



OFFICE OF THE
DEPUTY MINISTER.



44
Ottawa, March 28th, 1914.

Dear Mr. Falconer,

I am sorry that I did not see you when you were in Ottawa last week. As I mentioned to Mr. Kerr there is no objection to the principle of working through or with the University, it is merely a matter of arranging the work of the department to make it possible. If it is possible Mr. Keele would be the man who would carry on the work in Toronto.

With kind regards,

Yours sincerely,

McKenzie

Mr. Robert A. Falconer,

President,

The University of Toronto,

Toronto, Ont.



House of Commons

OTTAWA 10th March, 1914.

Dr. Falconer,
President, Toronto University,
Toronto, Ont.

Dear Dr. Falconer,-

Some little time ago I went into the matter of establishing a laboratory for Ceramics, and asked Mr. Kemp to bring the matter before the Minister, as he had opportunities of discussing with him that I have not. I enclose you a letter from Mr. Kemp, showing that he has taken the matter up, and I hope later on that we will be able to receive a favorable reply.

Yours very truly,

Ernest Thompson



708

House of Commons

OTTAWA 3rd March, 1914.

My dear Sir Edmund:-

I have spoken to Mr. Coderre, as promised, in regard to the request of President Falconer of Toronto University, asking for the establishment of a laboratory for Ceramics.

Mr. Coderre has expressed himself as favourable, but has requested me to write him fully upon the subject. I have today sent him a letter dealing with the whole matter and asked for his most favourable consideration.

I return herewith the two letters addressed to yourself by President Falconer, dealing with this matter.

I remain,

Yours faithfully,

A handwritten signature in cursive script, appearing to read "C. G. Knapp".

Sir. Edmund Osler, M.P.,
House of Commons,
Ottawa, Ont.

What Toronto University is Doing for Clayworking Industry

Dear Sir:

In reply to your request for a letter outlining what is being done by the University of Toronto for the benefit of the clayworking industry in Canada, I may say that, owing to the development of late of the Department of Metallurgy under Professor George A. Guess, it has been possible for us to provide space for investigating work in clays that has been conducted in the laboratories of the Metallurgical Department by Mr. J. Keele, who is on the staff of the Geological Survey. The result has been that we have had in all quite a large number of men who have had more or less systematic instruction in ceramic work. About thirty students, chiefly in the final year, are preparing their theses in clayworking subjects. To the third-year architects, to the fourth-year men in civil, sanitary, and highway engineering, and to the fourth-year miners, short courses of lectures have been given. In the Department of Metallurgy all the fourth-year men taking metallurgy, of whom there are nineteen, have been given laboratory work with clays. This work includes testing for (1) plasticity, (2) shrinkage on drying, (3) shrinkage on burning, (4) fusibility, (5) tensile strength, and (6) water absorption of the burned shape.

Three fourth-year miners, who have elected to take

their theses in metallurgy, are receiving aid from Mr. Keele in the clay laboratories. Their thesis work will include the making and testing of refractory bricks used in metallurgical work, in addition to fairly complete testing work with typical Canadian clays.

This, of course, is merely a beginning, but it is a beginning from which we hope greater things will soon follow. Toronto is such a centre for the clayworking industry that it is only reasonable to expect the Dominion Government to provide a laboratory for investigating clays in this large centre of the industry. The university would be glad to provide the space, and while the students might have the advantage of seeing what is being done in these laboratories, they would be taught by our own teachers. It is, of course, known to your readers that the work we would do will be different from what is done in the technical schools. We should be providing for the education of the ceramic engineer, the man who is to be put in charge of investigations, and who would have the direction of large works. I hope that the day is not far distant when, in the University of Toronto, there will be a well established course in ceramic engineering.

Yours sincerely,
Robt. A. Falconer, President.

"Canadian Clayworker" April 1914

Why Testing Laboratories Should be Established at University of Toronto

Canadian "Clayworker"
April 1914

It is proposed by the Canadian Government to establish testing laboratories on the same principle as those of the U.S. Government at Pittsburg. The Government is one of the largest users of construction materials, and it is proposed to carry on tests which would be of service in the selection of such materials. The laboratories will probably be located eventually at Ottawa, but the work of testing could be undertaken at once in our universities. For instance, if a temporary laboratory were established at the University of Toronto, the excellent equipment in the mechanical laboratory would be of the greatest assistance in conducting crushing tests, etc.

At the recent convention of The Canadian National Clay Products Association, this question was discussed, and it was moved by Gordon C. Keith, seconded by Dan. Lochrie, and carried unanimously:—

“Having heard from Dean Orton yesterday that one of the most promising signs of progress in the United States as a result of the courses in ceramic engineering was the establishment of testing laboratories by the Federal Government, and, further, hearing now from

President Falconer that pressure has been, and is being, brought to bear on the Canadian Government, to establish such for us: Resolved, that we the Canadian National Clay Products Association, assembled in convention in Toronto, approve most heartily of their effort and that this resolution be circulated among the members for their signature and presented to the Deputy Minister of Mines at Ottawa.”

Laboratories for General Benefit

Laboratories such as proposed would have to be equipped to give information to individuals and do tests for them because the industries and resources of Canada are in an earlier state of development than those in United States. The Bureau of Standards in United States carries on work for the Government as a user of materials, but a Canadian bureau would have to broaden out for some time at least.

Clay products manufacturers are greatly interested in this bureau. In all United States ceramic schools tests of clays, shales, and products are made, but there are no places in Canada, and one is in demand, where

April, 1914

THE CANADIAN CLAY-WORKER.

19

reliable information could be furnished at a nominal fee. The work could be started at the University of Toronto and be of great service to the clayworkers of Canada. The University of Toronto is mentioned because the Government is now carrying on certain investigations there and because this university has equipment required for the work to be done. Also, Toronto is at present probably the greatest clay products manufacturing centre in Canada.

There would be one thing to guard against in the use of the bureau by individuals. There are promoters who would prize a Government report, and a Government laboratory would have to be careful in handling outside business.

Such a laboratory would not affect the business now done by the few laboratories at present established in Canada. A great deal of work could be done which would not be possible in a private laboratory.